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Misrepresentation about Foreign Inventions.

"We ask attention to the letter of our own correspondent at Paris, giving an account of new machines and labor-saving processes, invented in Europe. A scientific or industrial discovery is often of more consequence to the world than the gaining of a battle or the accession of an Emperor, but hitherto the products of European genius in this line have not been reported upon in this country."—[New York Tribune.

[Our readers need not be told that in the above there is one statement that is altogether untrue, namely, about "the products of European genius not being reported upon in this country." The fact is, that nearly every number of the "Scientific American," contains one column devoted to foreign inventions. We have made it a practice to collate all the useful inventions patented in Europe, and to present abstracts of them to our readers. We profess to be able to understand what is good and what is useless in any new claimed invention; this has been our business for years, and we not only present regularly the very marrow of foreign inventions to our readers, but also all that is really useful in the progress of science. Some of our cotemporaries sometimes present a good foreign invention to their readers, about a year after it has been described in the "Scientific American," but they being unable to select the good from the bad, generally make themselves ridiculous by puffing such trashy inventions as "Hot Air Engines," "Fire Annihilators," "Centrifugal Force Engines," &c. It affords us pleasure to show our cotemporary light on any subject, for one thing is very *clear*, the "Tribune" has hitherto been groping in gross *darkness*, in respect to foreign inventions.

Prizes—the Last Call.

In the number of the Scientific American which will issue January 7th we shall announce the names of the Successful Competitors to our prizes together with the number of subscribers sent by each. Preliminary to this announcement we have examined the lists and find that there are three competitors on one prize and two on another who have each furnished the same number of names. It is probable that the competitors have not yet sent in all the subscribers which they intend to. If however it should in the end prove otherwise we shall be compelled to divide the amount and award an equal portion to each.

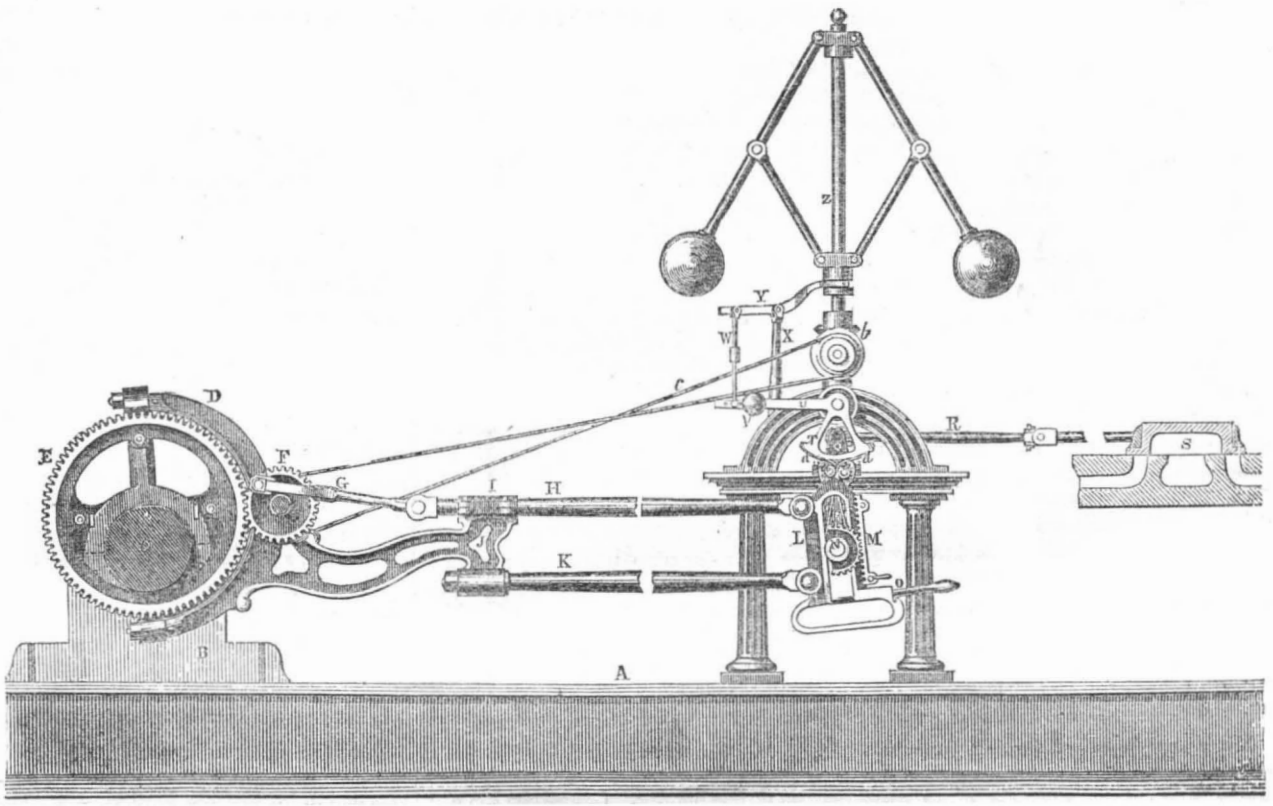
We hope our friends will persevere and increase their lists as much as possible. No doubt many of them, by a little extra exertion, can do this, and thus secure a prize of intrinsic value—Cash.

Inventors Protective National Union.

Having necessarily said so much this week about inventors and inventions, we have defered our remarks on the "Constitution" of this association till next week.

The Tribunal of Angouleme (France) has fined a railroad engineer 200 francs for having failed to notice the red flag, the signal to stop. No accident had resulted from his negligence, but it was thought best to make an example.

COLLINS' PATENT DUPLEX VALVE MOTION.



The above engraving is a representation of Collins' Patent Duplex Valve Motion, exhibiting its attachment to a horizontal engine. It is certainly very ingenious, and is, we think, well worthy the attention of engineers.

A is the bed plate, and B is the plummer block of the main shaft, C. On this shaft is keyed an ordinary eccentric, having upon each side a spur wheel, E, gearing into a pinion, F. The teeth in one of these spur wheels are opposite the spaces in the other. Upon the eccentric is a strap, D, of the ordinary construction, in which is the bearing of the pinions, F. This strap has an arm, J, in which the eccentric rod, K is fastened. It has also a slide, I, through which another eccentric rod, H, is worked by the connecting rod, G, attached to a pin upon the pinion, F. These two eccentric rods are attached to the ends of a link, L, in a slot through which the crank pin, N, of the rock shaft, works. Now it will be readily seen that when it is depressed so as to be nearly opposite the attachment of the lower eccentric rod, it will participate but slightly in the motion communicated to the upper one by the connecting rod, G, and the contrary will result from its elevation. This furnishes an opportunity for an adjustment of its motion, so as to cut off at from $\frac{1}{8}$ to $\frac{7}{8}$ the stroke.

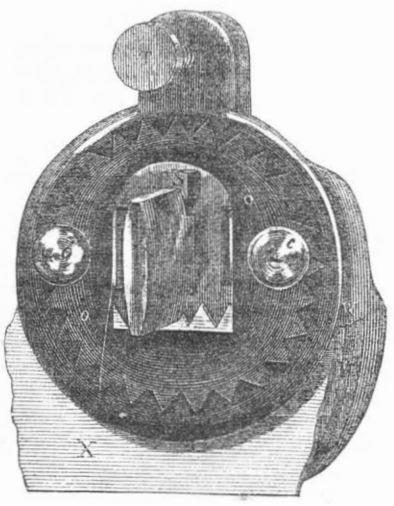
But let us examine the motions of the valve, S. By the eccentric rod, K, the long throw is communicated to the rock shaft, and from thence to the valve, by the valve rod, R. By the action of the upper eccentric rod this motion is so counteracted during one portion of the stroke, and accelerated during another, that the steam is let upon the piston at the moment when the crank pin has reached the dead center, with a port wide open, the exhaust being wide open also at the proper moment, thus leaving no lead to be counteracted, and also doing away with any wire drawing of either feed or exhaust steam.

Now by the action of the governor upon the weighted lever, U, in connection with the segment, T, the cord, *d d*, attached to the ends of T, and from thence passing downwards around the crank pin, N, which must be free to rotate; the segmental pinion working in the rack, M, will elevate the crank pin by the too rapid motion of the governor, and so cut off earlier in the stroke, or the contrary will result from a motion too slow for the purpose intended.

The advantages of this arrangement is apparent to any engineer. The first cost of the engine is reduced, as there are fewer parts; these are also more under the control of the engineer. It is self-adjusting, and the cut off motion with the opening of the ports at the proper moment is more perfectly attained than by any other arrangement known to us. This latter result must necessarily lead to an important saving of the fuel.

For any further information address the proprietors, Messrs. Rose, Middleton, & Tifft, 192 Broadway, N. Y.

Strait's Saw Doctor.—Fig. 1.

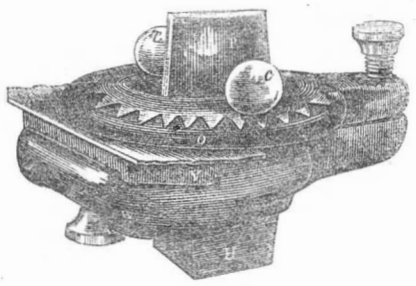


This instrument is intended to set the teeth of saws in a peculiar manner. By an ordinary saw-set the tooth is bent to a position inclined to the plane of the saw, in order to cut a *calf* wider than the thickness of the saw; if this were not done the saw would *pinch* and heat. This instrument is to effect the same purpose, but at the same time to bend the tooth in such a manner that the point shall still be in a line parallel to the motion of the saw, so that it may cut at right angles to the grain of the wood.

Fig. 1 is a top view, and fig. 2 a side view of the invention.

As will be seen by the engravings, it consists of two principal parts, of which O is the upper jaw, and W the lower; *c c* are screws working loosely through a slot in the upper jaw into

FIG. 2.



the lower one. A is an adjusting screw, by which a slide, V, upon which the saw, X, rests, is elevated to give a greater set to the saw tooth. P is the punch, to which a blow is communicated for setting the tooth; S is a spring for throwing the punch from the tooth; T is a screw for grasping the saw; H is the handle for holding it in the vice.

The slide, V, is double bevelled, while its bed in the under jaw is only beveled in its length; it has three different adjustments for different kinds of teeth; when vertical teeth are wanted it is pushed up in its bed so as to form a greater or less shoulder, when it is adjusted to a level by the screw, A. When inclined teeth are wanted it is inclined back by the screw, A, and is not pushed up in its bed. When it is desired to combine a shoulder and a set upon the teeth, the slide is pushed up more or less in its bed, and then adjusted back by the screw, A.

Before using the Saw Doctor, even the teeth of the saw, and determine what kind of teeth are wanted, adjust the slide accordingly, and fasten it in a vice by its handle, H; then introduce the saw between the jaws so that all the teeth can be slid under the wing of the punch, press the jaws firmly together and tighten the screws, *e e*, so as to touch the upper jaw with their shoulder. Tighten the screw, T, so as to allow a firm and free sliding motion of the saw between the jaws without any vibrations; pass every tooth under the wing of the punch and strike a blow sufficient to shape the tooth as wanted. When the saw is of unequal thickness, the screw, T, must be re-adjusted.

For further particulars address H. Strait, Covington, Ky.

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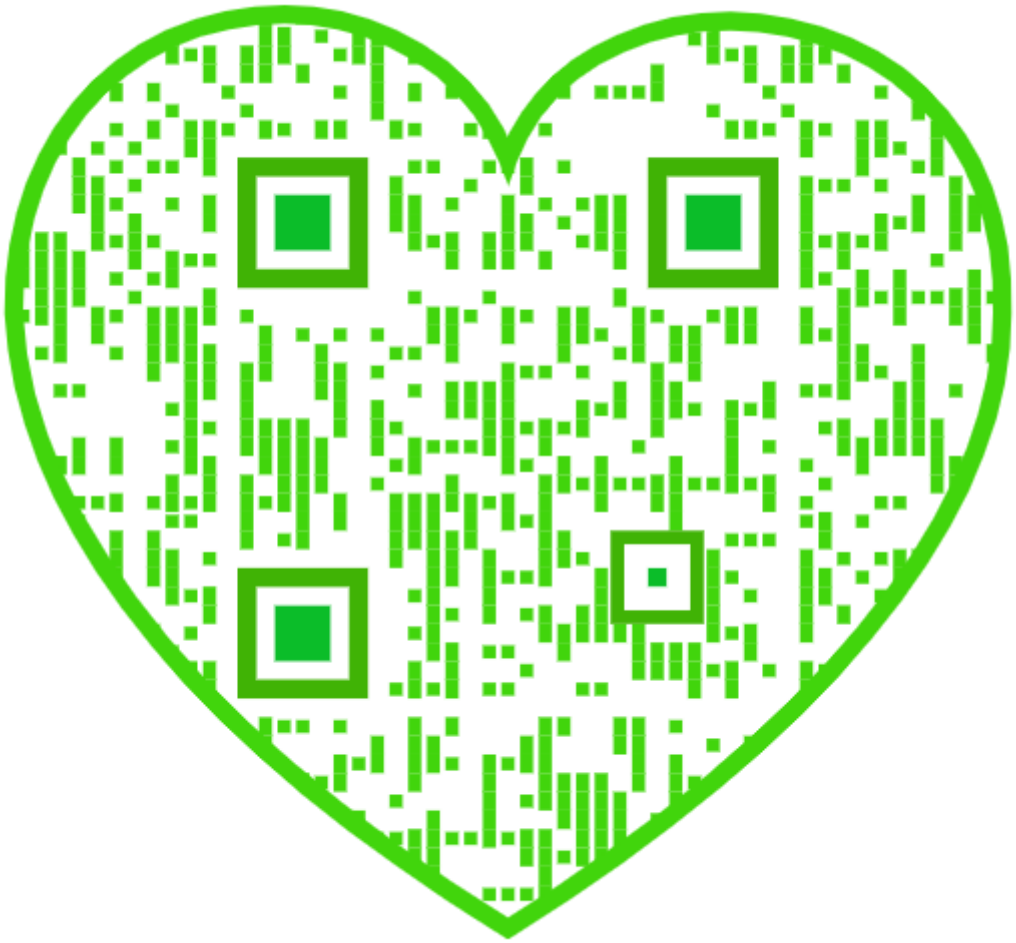

Imponderable Agents.---No. 2.

[Second Series.

LIGHT—In our last number the theories of Descartes and Newton were presented, and their identity in relation to an undulatory action pointed out. The arguments we have adduced to prove that identity may be new, but not the conclusion. We have still something to add to them.

If light were composed of luminous particles projected through vacuo from the sun, then those particles, if possessing inertia—according to the corpuscular theory—must be deflected from opaque bodies, such as from the moon to the earth, and vice versa, and at last be deposited on all the planets and their satellites reciprocally. As these particles of light cannot be annihilated, it must follow that an accumulation of them should make our earth a luminous body. As there is no prospect of this taking place at present; and as the sun fulfills the same Divine office now as at the Creation—"giving light to the earth," we must conclude that the theory of a subtle ether pervading space, the vibrations of which produce the phenomena of light, appears to be the most rational. But we have stated that the luminous particles of Newton must, in the aggregate, form an elastic subtle fluid, and thus the theories of Newton and Descartes dovetail into one another. If those luminous particles do not form an elastic fluid in the aggregate, they must form "light-dust,"—an atmosphere of rigid particles—and if so, they can easily be weighed, but still this will not exclude them from the undulatory theory, for a motion impressed upon such particles must be undulatory. The readiness by which so many facts in relation to *light* can be explained by both Newton's and Descartes, theories, thus finds a solution; both are true—identical.

LIGHT AND SOUND—Euler has, in a most beautiful manner, compared the action of producing light by the vibrations of his subtle ether, to the production of sound, by the vibrations of our atmosphere. In explaining his theory, he employs a bell as an instrument of elucidation. In condemning Euler's explanation, it was said, "unfortunately for this hypothesis, it has been found that the conducting power of the air increases with its density, while wood and the metals are better conductors of sound than any other matter." This does not affect Euler's explanation, for density in bodies, independent of elasticity has nothing to do with propagating sound, and it was the great *elasticity* of his ether which Euler considered, gave it the power of producing undulations with such extraordinary rapidity. The above quotation conveys the idea that sound is conducted like water running through a pipe, not produced by vibrations, and is therefore not a proper explanation of the phenomenon. The power of any body to propagate sound, depends entirely on its elasticity—not its density. Taking air as unity, in producing sound, iron is equal to 17, while glass is also 17, and yet the specific gravity of the latter is to the former as 1520 is to 7786. Sound can scarcely be propagated by lead at all, and yet its gravity to iron is as 11,352 to 7,786. The velocity of sound through silver is 9, through copper 12, and yet the specific gravity of the latter is to the former as 8,788 to 10,474. Sound is propagated through the air with a velocity in proportion to its elasticity. An increase of temperature in the air of a close apartment augments the velocity of sound. A perfectly inelastic body, however dense, cannot propagate sound. This is well known to all those who are acquainted with the science of music, and with musical instruments. The elastic quality in bodies for producing and propagating sound, has no reference to their ductility, that drawing-out quality peculiar to some elastic substances—but the rapidity and power by which bodies, when pressed or impinged upon, return to their original state.

As we intend to present useful and interesting information on all subjects which have a bearing on these questions, the laws and phenomena of "Sound," may be profitably discussed. The aerial currents and fierce winds do not produce sound, and yet sound, loud and intense is produced without any current being felt in the air, by simple pulsations. How trite, then, is the comparison of Euler, namely, that Light, like Sound, is produced by the vibrations of a subtle elastic aeriform fluid.

It has been said of this theory that "a luminary emitting white light must, at the same instant, be vibrating at the different rates which produce all the colors in the spectrum."

This is not so; for these vibrations are modified in length and velocity by different media. If the objection were good, it would be equally so against any theory yet proposed. It is a curious fact, that sound is modified or affected in the same manner. The *pitch* of a musical sound is determined by the number of vibrations which reach the ear in a second of time. The sound of the steam whistle of a stationary engine is heard in a different key by a person traveling in a train in rapid motion, from that in which it is heard by a person standing beside it.

The same is true of all sounds. If an observer in a railway train be moving at the rate of 56 miles per hour *towards* a sounding body, he will meet a greater number of vibrations in a second of time, than if he were at rest, in the proportion to which the velocity of the train bears to the velocity of sound, and he will hear it a semi-tone higher than a person moving *from* the same sounding body at the same velocity. In the case of two railway trains running towards one another at this velocity, the one containing the sounding body, and the other the observer, the effect is doubled in amount. Before the trains come together, the sound is heard two semi-tones too high, after they pass two semi-tones too low—equal to a major third.

(To be Continued.)

Carburetted Hydrogen.

MESSRS. EDITORS—I beg to offer a few remarks in reply to J. F. Mascher's article, on page 90 of the "Scientific American," on the subject of Gas Burning. Combustion can only take place at the point where the substances which enter into combustion are immediately in contact—this is distinctly seen in the flame of a common gas burner. The true combustion is confined to a thin exterior sheet of the flame, and all within this is dark, affording no light whatever, because it is occupied by the combustible material or gas escaping from the source of its supply. The interior part of a gas flame varies in darkness according to the pressure of it in the pipe, and is incapable of entering into combustion and giving light from want of proper access to the oxygen of the atmosphere, which is indispensably necessary to the developement of combustion. There is also seen in gas flames a thin blue line around the exterior, which is caused by the low temperature of the gas, and affords little or any light; so that quite one-third of the gas flame is destitute of light. Now, the dark portion of the interior of a gas flame is simply the result of the gas escaping faster than the process of combustion can consume it. Mr. Mascher says, after charging the bladder with gas, "putting it under my arm the results were these; with a moderate pressure of the arm, I obtained the usual light, but on increasing the pressure to a certain extent, I was surprised to find that, instead of obtaining more light, the gas burned with a perfectly blue flame, and the room which was in the first place illuminated, suddenly became quite dark, although it is evident that with the increase of pressure there was an increased consumption of gas." Now my explanation is proved by the first part of Mr. Mascher's remarks, to be correct, that the dark portion of the flame, is caused by the gas escaping too rapidly for the process of combustion, which is unable to take it up so fast. But with increased pressure I don't think there is an increased consumption of gas by combustion; it is wasted because it is carried beyond the point where combustion is actually taking place by its own elastic force, when a considerable body of it is confined, thereby creating great pressure.

CHAS. W. TYLER.

Philadelphia. Pa.

[Our correspondent fails to explain the phenomena described in Mr. Mascher's letter. By the theory above set forth, a white flame should give the most intense heat; but this is not so in fact. If we take a common gas white flame and reduce it to a blue flame, it will give out more heat in the latter case, but less light. The white flame of gas light does not depend upon the intensity of the heat, but the time and space, to allow the solid particles of carbon in the gas to be become incandescent. That the carbon can be consumed (converted by oxygen into C. O.^{2}) during combustion without producing white light, is something which Mr. Mascher's experiment went to prove, and this contrary to the views generally entertained respecting gas illumination in one case, and respiration is a conclusive proof of the same fact in another case. As the white light was depreciated in intensity, by those experiments, the heat was increased. By the undulating theory of light, the blue waves are shorter and more rapid than the red and the yellow, and this has its parallel in the gas flame when the pressure is increased. The way to prove this is to take the socket of a common gas burner, and cover it with a disc of fine wire gauze. The gas will burn above the wire gauze with a yellow flame, which gives more light than a blue flame; by converting this yellow into a blue flame, the heat will increase but the light will decrease. Now, whether is the greatest amount of heat produced by the most perfect combustion, or the greatest amount of light? Some may say, "the most perfect combustion produces both the greatest amount of heat and light," and yet here is an experiment which proves that the heat is increased in a gas flame at the expense of the light. The yellow flame above the wire gauze is converted into the blue flame by blowing into it with a blow-pipe. This device is well known to all jewellers, and has long been employed by them for soldering. A heat can thus be produced so intense as to melt gold rapidly. The fact is, however, that light can be produced independent of what is understood as combustion, that is, the chemical union of oxygen with carbon to produce carbonic acid gas by a flame. No carbonic acid gas is formed by the electric light, which is the most brilliant of all, hence from this we may infer that those sages of the British Association who have forebodings of the sun's light decreasing, may rest contented, for in Nature, provision is made for the production of light *ad infinitum*.

Large Ships - Ancient and Modern.

As the question of large ships appears to engage no small amount of public attention at present, by the construction of the "Great Republic," and the proposed mammoth steamer of the "Eastern Steam Navigation Company" in England, it may not be uninteresting to devote some space to more than a mere passing notice of the subject.

Some ships were built by the ancients, which for mass far surpassed any now afloat. One was constructed for Ptolemy Philopater, which was 420 feet long, 56 feet broad, and 72 feet deep, and of 6,445 tons burden. The "Great Republic" is 325 feet in length, 58 feet in width, and 39 feet in depth, with a registered burden of 4,500 tons but it is capable of carrying more than 6,000 tons of cargo. It is recorded that Archimedes—who was perhaps the greatest mechanical genius that ever lived—constructed a ship for Hiero, King of Syracuse, of such large dimensions that none of the harbors in Sicily, or Greece could receive it. Noah's ark, by those who are curious in such things, has been calculated to have contained 1,500,000 cubic feet, and was of 11,905 tons burden. As this vessel was of antedeluvian origin, it may be allowed to stand out as a giant representative of nautical architecture, belonging to the age of giant men, but architects are now determined to surpass even the great father of their calling, by constructing a steamship of 22,942 tons burden, and of an external bulk of 2,973,593 cubic feet. This is the vessel to which we have alluded; it is to be built of iron, a substance which would have been deemed by the ancients better adapted for sinking than swimming. The largest mercantile steamships afloat at present, are those of the Collins Line; the "Arctic" being 3,000 tons burden—the only exception to these is the Great Britain, which is 3,445 tons burden. There is one—the Hymalaya—now in the course of construction, by the Cunard Company, which is to be of 3,532 tons burden. A remarkable difference between modern and ancient times, in state and condition, is exemplified in the "Great Republic." It is the property of a private American citizen; the wealth and resources of all Sicily was called into requisition to construct Hiero's leviathian.

Two hundred years ago the largest vessels were about 80 tons burden, and with a vessel of 60 tons Columbus crossed the Atlantic and discovered our continent. Ten years ago the largest merchant ships afloat were of no greater tonnage than from ten to twelve hundred tons burden, while at the present moment the general tonnage of new built ships range about double that amount. It would therefore seem as if the bent of the nautical mind was in favor of "large ships." There is a line of demarcation, however, in magnitude, beyond which ships cannot be constructed either with safety or profit. The latter consideration entirely depends on the length of voyage, the former on the strength and combination of materials employed in the construction; and the manageableness of the ships at sea. For long voyages, large ships are the most economical, for short voyages small ones. The other consideration, *safety*, Griffith, on page 114 of his "Ship Builders Manual," says, "shipbuilders are mistaken when they assume a large ship to be equally strong with a small one, and as vessels are increased in size, the leverage of the spars tell with more effect. As a consequence, the liability to the damage of cargoes in large vessels is greater than smaller ones, more particularly clipper ships, because of their increased length." Here is a statement which affords some solution to the complaints from San Francisco, of the great damage sustained by cargoes in recently constructed large clipper ships which have made voyages to that place. "Some other measures,' says the same work, "must be adopted for strengthening such vessels." New improvements, therefore, are demanded in the combination of materials in the construction of large ships. The "Great Republic" is stated to be not only the largest but the strongest built ship in the world, and no doubt the boundary line of safety for large ships is far from being reached yet, but where that line is, we cannot tell, nor do we find any satisfactory information on the subject in any of the works we have consulted. Large vessels cannot be managed in a rough sea so well as small ones; they are not so obedient to the helm. As Napoleon said in respect to Generals, "there was only one in Europe beside himself who could manœuvre 100,000 men," so it may be said of sea captains; it certainly requires greater mental capacity to command a large than a small ship. Revolving the subject of large ships over and over, and taking into consideration the great advances which have been made in the size of ships since the Galleon of Columbus touched the Columbian shore, it is our opinion that we shall yet see much larger ships in our harbor than any which now float there; the "Great Republic" is a shadow of "coming events."

Beware of Putting "Patent" on an Unpatented Article.

On the 9th inst., as we learn by our Boston cotemporaries, a very important patent case was tried before Judge Sprague, in the U. S. Circuit Court in that city. The complainant was J. R. Nichols, the defendant J. Newell and others. The suit was brought against defendants for putting the word *patent* on certain articles which were not not patented, in violation of the patent law, which make a fineable offence of $100 for every case—one half of the fine goes to the informer. The defendant was fined $400. The articles against which complaint was made, were camphene lamps and cans. Both parties are well known to our readers.

Dr. Bridgeman says that the last census of China which he saw in print was for the year 1813, which made the population of the Empire more than 361,000,000. He is confident that the present population cannot be less than 400,000,000.

Henry Ramsey, C. E., of Schenectady, N. Y., has been appointed State Engineer.

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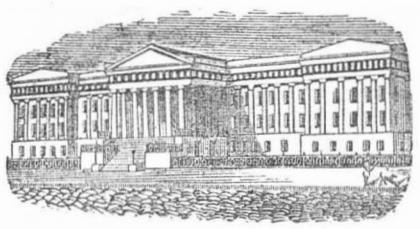

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 13, 1853.

HYDRANT VALVE—By James Cochrane, of New York City: I claim combining with the issuing pipe and main cock or two way cocks, flat or conical valve and leakage wastewys, a piston and chamber, or a partly flexible chamber emptying into and receiving from the issuing pipe, water, between the interval of opening and closing the main and leakage waste way.

I claim, also, the shutting force, by hydrostatic pressure and gravity of the ordinary waste water; also the general arrangement of the moving parts by their gravity, to favor the shutting force, as set forth.

BIT STOCKS OF BRACES—By John Comstock, of New London, Ct.: I claim the arrangement of the ring with its pin or screw, in combination with the eccentric shaped back catch, and the helical spring, the whole combined and arranged as set forth.

MODE OF FIXING THE COLORS OF COTTON UMBRELLAS.—By Norman Cook, of New York City: I do not claim the composit on of the preparation applied, neither do I claim the application o. such preparation for rendering cloth water proof.

I claim the application of a dilute solution of india rubber paste or cement, as described, to cotton or gingham umbrella coverings, for the purpo e of enveloping the fiber of the cloth, and setting the color of the same, without adding to the weight of the umbrella, as set forth.

CAR WHEELS—By Carmi Hart, of Bridgeport, Conn.: I claim the arrangement of the plates of the wheel in the arch at the hub, so that its opposite sides curve in similar curves, adapting themselves to each other, and are also ogees, and whose continuation from the apex or point of unison is also an ogee to the rim in combination with the spokes or radii, which are ogees on the surface of the inner plate, and also ogees sidewise, and forms a continuous part of the inside plate itself.

INKSTAND COVERS—By Jos. Nock, of Philadelphia, Pa.: I claim the application of the stamped round part and the solid part (or the moving lid or cover), fitted together as a hinge, which forms a rounded smooth turned face, and the manner in which the pin is connected with both parts, as described, using for that purpose the aforesaid two pieces to form a regular curvilinear or round turned hinge, made of any materials which will produce the intended effect.

SPRING CLAMPS FOR CLOTHES LINES—By F. S. Hotchkiss & C. W. Blakeslee, of Northfield, Conn.: We claim the connecting t gether of the two levers, as described, by one piece of metal, in such form and manner as to constitute both spring and hinge, as set forth.

TURNKEYS—By Melvin Jinks, of Wayland, N. Y.: I claim the turnkey, as described, in the adjustable claw, constructed and arranged as described, in combination with another claw, and the rolling fulcrum having a limited motion.

[In Vol. 7, page 396, may be found a description of this invention.]

BEDSTEAD FASTENINGS—By W. E. Merrill & Freeman Tupper, of Nashua, N. H.: We claim securing the posts and rails together, by means of the corner irons attached to t e ends of the rails and the clamp or dog attached to the posts of the said corner irons and clamps or dogs, being constructed and arranged as described

[A description of this invention may be found on page 298, Vol. 8 Sci. Am.]

HARVESTERS AND BINDERS—By J. E. Nesen, of Buffalo, N Y. Patented in England Aug. 27, 1853: I do not claim the slotted fingers, nor the teeth, nor do I claim an endless belt, irrespective of the peculiar motion communicated to it.

I claim, first, giving the endless apron an intermitting motion, for the purpose of carrying the grain to the binding hooks, at intervals and in proper quantity said motion being communicated to t he apron, by means of a belt shipper worked automatically, from some moving portion of the machine, as described.

Second, I claim gathering the grain in bundles or sh afs, by means of the binding hooks, or their equivalents, said binding hook being arranged an l operated as shown—motion being communicated to them by means of the reciprocating bars, as described.

Third, I claim the binding hooks in combination with the endless intermittently moving apron, the hooks and apron being constructed, arranged, and operated as set forth.

[This invention possesses novelty and utility. The Foreign as well as American patents were solicited through this office.]

SECTIONAL BEDSTEADS—By Chas. Page, of North Danvers, Mass.: I do not claim a sectional bedstead the portions of which revolve upon hinges, for the purpose of more convenient transportation, or of raising the head as may be r-quir d; neither do I claim securing the mattress permanently to the bedstead.

But I claim, in a sectional folding bedstead, the combination of the adjustable sections with the revolving head and foot boards, as described, by which means the bedstead may, at any time be converted into an invalid bedstead, and extended in such manner that the body and head of th patient may be raised and lowered, independent of each other, his feet being furnished with an elastic foot board, as set forth.

PEG RASPS—By Jos. Sawyer & Lyman Clark, of South Royalston, Mass.: We do not claim hanging the rasp of a tool for cleaning out pegs from the inside of shoes and boots upon a pivot, and allowing it to adjust itself to the position required, as this has been done before, and is furthermore liable to several objections, the removal of which is the object of our present invention.

But we claim the combination of the spring b lt and thumb piece, or their equivalents, with the pivoted rasp constructed and operated as described.

MACHINES FOR CUTTING SHEET METAL—By Jno. Wilmington, of South Bend, Ind.: I do not claim the rotary shears: but I c aim the vise in combination with the tram upon which it moves, and upon which the sheet rests, during the operation of cutting, as set forth.

PUMP VALVES—By J. R. Ba sett, (assignor to James B. Williams), of Cincinnati, Ohio: I claim, first, the construction, as described, of the puppet check valve, serving also as the piston of a pneumatic spring, and provided, at its lower end, with a small starting valve, substantia ly in the manner and for the objects explained.

Second, the segmental cylindric slide valve of the discharge openings having prongs as described, connecting it with the clack valves upon the supply openings, so that the motion of the supply valves shall be communicated to the discharge valve, as ex plained.

MACHINES FOR MOULDING BRICK—By John Butter (assignor to James Sully and Jno. Butter), of Buffalo, N. Y.: I claim tw- hinged followers, so constructed and operated as to press the clay uniformly into the moulds, that is, each end alike, whether operated by gears or levers.

A Lead Wire the thirteenth of an inch, sustains but twenty-eight pounds. A Tin Wire, the thirteenth of an inch, sustains but thirty-four lbs.

New India Rubber Case.

We here present the decision of Judge Duer of the Superior Court, in this city, on the above case, which was finished on the 9th inst.. It had been on trial several days, and eminent counsel were employed on both sides. The question was between Horace H. Day and William Judson. All those interested in patents should give this case particular attention. Wm. Judson filed his bill to obtain an injunction against Day from prosecuting certain suits in the Circuit Court of the United States, (in which Day is seeking to recover damages for infringement of a patent granted to Edwin Chaffee, and by him conveyed to Day,) on the ground that Judson owned the patent, by assignment, and the conveyance to Day was invalid.

JUDGE DUER'S DECISION.—I shall not trouble the counsel of the respondent to reply. I have reflected on this case from the opening of the argument, and am now prepared to state the conclusion to which I have arrived.

I think it quite unnecessary to inquire whether this Court can rightfully stay proceedings in the Court of a sister State by an injunction, but with regard to suits pending in the United States Courts the case is different. With respect to them the general rule is understood to be, that neither will the Courts of the United States attempt by injunction to restrain a party from proceeding in a suit in the State Court; nor, on the other hand, will the State Court attempt to restrain by an injunction, proceedings in a Court of the United States. Whether that rule is absolute and universal—whether there are or are not any exceptions to it, it is not necessary to decide in this state of the case.—That will be a question which, if your suit is continued to be prosecuted, will arise when a final decree shall be asked for. Admitting, however, that there may be exceptions to the rule, as it respects a court of the United States, I hold, that in order to justify a Court in treating any case that is brought before them as an exception to that rule, the following facts must appear:—First, that the complaints must be founded upon the equity that the Court of the United States, in which the suits are sought to be enjoined are pending, is not competent to administer the cause—in other words, that the equity which is sought is one which can only be had in the new suit which is instituted; and second, that the whole controversy between the parties may be determined in the new suit which is instituted—or in other words, that the parties who are sought to be restrained from the prosecution of their suits in another Court, may have exactly the same relief if the controversy is determined in their favor in the new suit which is instituted, as if they never entertained any of the suits which have been commenced. Now applying these rules to the present case, the first condition seems to be fulfilled. The object of this suit is to obtain a final determination of the question whether the prior grant made to Mr. Judson, the plaintiff, on this grant under which Mr. Day, the defendant, claims is valid. That question could not be finally determined in any suits that are brought by Mr. Day against the licensees of the present plaintiff. It is true that each of these licensees may set up as a defence the prior grant made to the present plaintiff, and the question as to its validity might arise in this suit; but the determination made between them would not conclude any other licensee, and therefore surely would not conclude Mr. Judson. I therefore think that the main question depending between the parties—namely, which of them has a preferable title as assignee of the original patent—is one which will probably be determined in a suit between Judson and the present defendant. Therefore I would not scruple, perhaps, even to issue an injunction, provided the other conditions were fulfilled—namely, that this whole controversey should be finally determined. I am now considering the case as if the application was made to me upon the complaint itself, without any evidence on the other part. I have no right to suppose upon the complaint itself that the plaintiff considers it as a fact conceded that these complainants are absolute owners as assignees of this grant; because, if so, then the question could not arise whether the defendant would or could not be entitled to damages in the suits which he has instituted. I am bound to suppose in determining the question whether the Court will exercise its discretion in issuing an injunction, that the allegations in the complaint may perhaps be refuted, and that in the conclusion of the controversey, the defendant may prevail. Then I hold it to be a necessary condition in all cases where an injunction is to be issued, where a bill of peace is filed, whether in a State Court, or in a Court of the United States, that the party who is thus enjoined shall have, in the new suit thus instituted, the same relief which, if he prevails, he would be entitled in the suits which he himself has brought. Now, if the other parties against whom these suits are instituted, were all of them parties to the present proceeding, and by a final decree of this Court, this defendant could obtain against them here, precisely the same relief which is sought in the suits that have been instituted, that objection would be removed. But they are not parties to this suit, and all that can be determined in this suit, even if it should be decided in favor of the defendant, is that his grant is preferable, and that the prior assignment made to Mr. Judson, the plaintiff, is void. His right to recover damages will remain still undecided, and he will be compelled to prosecute his suit against the defendants, who, in the meantime, may have become irresponsible. Upon the ground, therefore, that this controversy cannot be determined finally in this suit, and that the defendant cannot obtain the relief here which he is seeking to obtain in the suits which he has instituted, I feel myself bound to deny the motion for an injunction.

In answer to an inquiry of Mr. Stoughton, Judge D. remarked that he never knew of a case where an injunction had issued on the application of a party who was not a party to the suits to be enjoined.

An appeal was taken to the General Term.

For Judson, Charles O'Conner and James T. Brady; for Day, N. Richardson, of Boston, and E. W. Stoughton, of New York.

[Our readers will percieve the importance of this case, by the eminent counsel employed. The patent in dispute is that of E. Chaffee, an extension of which was granted by Ex-Commissioner Ewbank.

The assignees of the first term of this patent were Goodyear, Judson, and others, (we do not know all their names) but the extended term of a patent does not become the property of the first assignees; it is wholly the inventor's property; former assignees have no legal right to an extended term. H. H. Day, it seems, has become the assignee of the extended term, but there is a dispute about the legality of his bargain. H. H. Day having become the new assignee of the extended term of Chaffee's patent has entered his suits against a number of old assignees, who have been carrying on the manufacture of prepared india rubber goods as formerly. His (Day's) suits are for the infringement of the patent. The above decision relates to a mercantile transaction; but connected with patents, it embraces new points of legal dispute of no minor importance.

Trial About Selling a Patent.

In this city on Friday the 16th a suit was brought before Judge Ingraham by Samuel G. Walker against Abraham Cox to recover damages (amount laid at $1,000) for alleged deceit and false representations—plaintiff having been induced, it is said, by defendant to purchase and pay $625 for a fortieth part of "Mallet's Improved Bell Telegraph," defendant knowing that the right to said invention was claimed at the time by Timothy D. Jackson and A. Judson, and that a suit brought by them was pending in the United States Court at the time to test the said patent; that plaintiff tendered back the share in said patent and asked for a return of his money, which was not made and action is brought.

In defence, it is denied that Mr. C. knew that there was any doubt in regard to the patent, or that there was any suit pending, or that he made any false representations. He says that he was employed to sell a part of Mr. Howland's interest, and referred plaintiff to Mr. H., and that plaintiff, after examination, purchased. The complaint was dismissed.

Measuring the Area of a Circle.

Permit me, through the columns of the "Scientific American," either to correct an error or to be myself corrected. In No. 12, of the present volume, were given some good practical rules for finding the area of a circle, illustrated by two examples. If I mistake not, however, there was an arithmetical error in the latter proposition, which stands thus:—$4 \times 22 = 88 \div 7 = 12\ 6\text{-}7$; instead of twelve and *four* sevenths; which latter number would quadrate exactly with that in the former proportion. H. F.

Spring House, Montgomery Co., Pa.

[You are perfectly right sir, and we thank you for calling our attention to the subject.—We saw the error also, but too late for correction in *that* number; we intended to make the correction in our next, but forgot to do so. We make no excuse, for the error should not have been made; it teaches us to be more watchful of our language.

A more minute rule than the one given above to find the circumference of a circle, when the diameter is given, and thus find out its area, is the following:—"The circumference of a circle is to the diameter, as 3·14159 is to 1."

This rule we have always used ourselves, it requires more figures than the other, and this was the reason we did not present it, as the other is sufficient for all practical purposes.—What is the circumference of a cylinder, 6 feet in diameter; $6 \times 3{\cdot}14159 = 18{\cdot}84954$. Old Rule. $7 \div 22 \times 6 = 18\ 6\text{-}7$.

The Illustrated Weekly Record of the New York Exhibition of the Industry of all Nations.

Edited by B. Silliman, Jr., and C. R. Goodrich. G. P. Putnam & Co., of this city, having been selected as printers and publishers extraordinary to the the Crystal Palace Association, undertook the publication of the above work, which we have briefly noticed during its progress. We are inclined to think that the "Illustrated Record" has not received from the public that degree of appreciation it so justly deserves; this has undoubtedly compelled the publishers to restrict the quantity of matter originally intended for it. The number before us embraces 15, 16, 17, and 18, although no larger than two single numbers ought under different circumstances to have been. The necessity which exists for its abridgement is to be regreted for in a strictly artistic sense is the most meritorious work ever undertaken here.

There is, we think, one good reason only for its apparent failure, viz., the dull and heavy character of the articles. *Classicality*, want of condensing power, absence of the right sort of stamina which makes up the Peoples' Instructor, too much learning in abstractionisms are incapable of satisfying the universal thirst which now prevails for the arts and sciences. The editors, although able men in their proper spheres, were evidently never intended for this particular species of intellectual labor. Notwithstanding this defect the work deserves support. The engravings which have graced its columns are generally of the first order in point of mechanical execution, reminding us of the designs illustrated in the celebrated "London Art Journal," and the public are indebted to Messrs. Putnam & Co., for the stimulus which they have given to the wood engraving art, an art which is rapidly supplanting all other processes for beauty, rapidity, and excellence.—The "Illustrated Record" will make a very handsome volume, and we hope the public will feel interested in its circulation. The numbers bound will make a beautiful volume of the useful and ornamental—fit for the library or the center table.

Treatment of Trees in Cold Weather.

We occasionally hear of people being quite at at a loss to know what to do with trees received in a cold time, or when the ground is frozen. The way is, either deposit the packages in a cellar as they are received, or open them and set the roots in earth until the weather changes or a trench may be made in the open ground, even if the surface must be broken with a pick-axe, and the trees laid in until they can be planted. They may remain in this state quite safe all winter. Every season, we receive packages of trees from Europe in mid-winter, and we find no difficulty in taking care of them in this way. —[Horticulturist.

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New Inventions.

Former for Boot Leather.

John Chilcott and Robert Snell, of Brooklyn, N. Y., have invented an instrument which they denominate a former, which is intended to be used as a mould or block, on which to told a piece of leather of suitable size to form the whole upper of a boot in such a manner as to avoid the usual process of crimping. It constitutes a variable mould or block which can be adjusted and varied in its size and proportions, so that the whole of the uppers of various sizes may be formed by simply lapping the leather around it, and securing the necessary parts together. It somewhat resembles some of the implements used for crimping, but while they stretch the leather, this simply presses it into shape. The inventors have applied for a patent.

Elastic Oil Chamber.

George W. Rice of Louisville, Ky., has invented an improved oil chamber, which consists in arranging in the lower part of the ordinary oil chamber of journal boxes an extra chamber, which is filled with oil, and sponge or other absorbent, and caused constantly to press against the journal by a spiral spring under its bottom. By this arrangement it is evident that the space left open under the end of the journal as the upper box is worn away in those which hang upon the journal, will be continually filled by the end of the box, and thus all dust will be excluded. The inventor has applied for a patent.

Hen's Nest.

C. V. Ament, of Dansville, N. Y., has made one of the most astonishing inventions which for many long years has fallen beneath our notice. It is nothing less than a hen's nest so constructed that when the ovipositing Shanghae or Cochin China having arrived at her full time shall have deposited the embryo of a future fowl, the ovum passing through an aperture in the lowermost portion of the nest, and falling upon an elastic cushion beneath, shall pass away into a receptacle destined for its protection from the chilling frosts of winter, or the greedy attacks of some egg-eating quadruped. But judge the astonishment of biddy when arising from her seat and looking around her she beholds that the precious deposit has vanished forever from her sight? The inventor having the necessity of the public fully before his eyes, has applied for a patent.

Machine for Tenoning Blind Slats.

Thomas G. Stagg, of Jersey City, N. J., has made application for a patent on a machine for tenoning the ends and wiring the slats of Venetian Blinds. It consists in the use of stationary knives and a series of cutters placed on a vibrating head. Two of these heads are employed, and by their use the tenons are cut upon the ends of the slats of equal length and at the same time. A clamp lever and a staple is also employed for pricking the holes in which the wires are inserted.

Improved Car Seat.

John H. Bloomfield, of Albany, N. Y., has invented an improved car seat, which has a peculiar manner of attaching the backs of the seats to the arms, whereby they may be made to revolve or turn over the seat, and may also be placed at any desired angle with it. A segmental slide is placed underneath, capable of being shoved out when desired on either side of the seat to serve as a support for the lower extremities of the person occupying it. A patent has been applied for.

India Rubber Beneath Rails.

The New York Central Railroad Company have assumed the expense of laying one or two miles of india rubber under their tracks, intended to obviate materially the present destruction of rails and machinery, and do away with the noise attendant upon the motion of the trains. We are glad to learn that this invention is to be tried in this country. A patent was taken in England two years ago, but we have never heard of its adoption there.

TAGGART'S IMPROVEMENT IN FLOUR MACHINERY.

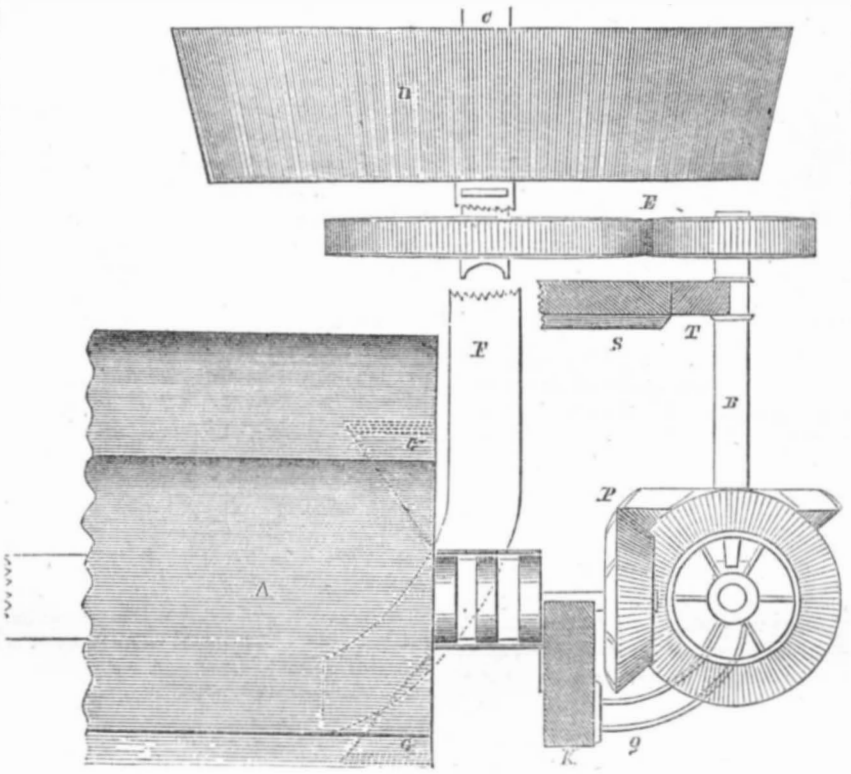
The accompanying engravings represent improvements in the mode of driving or gearing flour bolts.

Fig. 1 is a sectional view of the bolt, cooler, and gearing. Figure 2 is another sectional view of the cooler and bolt apparatus, with annular chamber, D, and sweepers, H H, immediately under the hopper boy and flight arm, Y.

Before specifically describing these improvements, their construction and operation; we will briefly describe the machinery now in use for the same purpose, and allude to some of the difficulties found in its practical operation, which these improvements are intended to remedy or overcome.

The common mode of supplying feed from the cooler to the bolts, is by means of the well known spouts, with a "drop shoe" placed under each spout. These shoes are operated by placing cam wheels upon the gudgeons of the bolt shafts, which jar the shoes up and down, and cause the meal to slide over their inclined

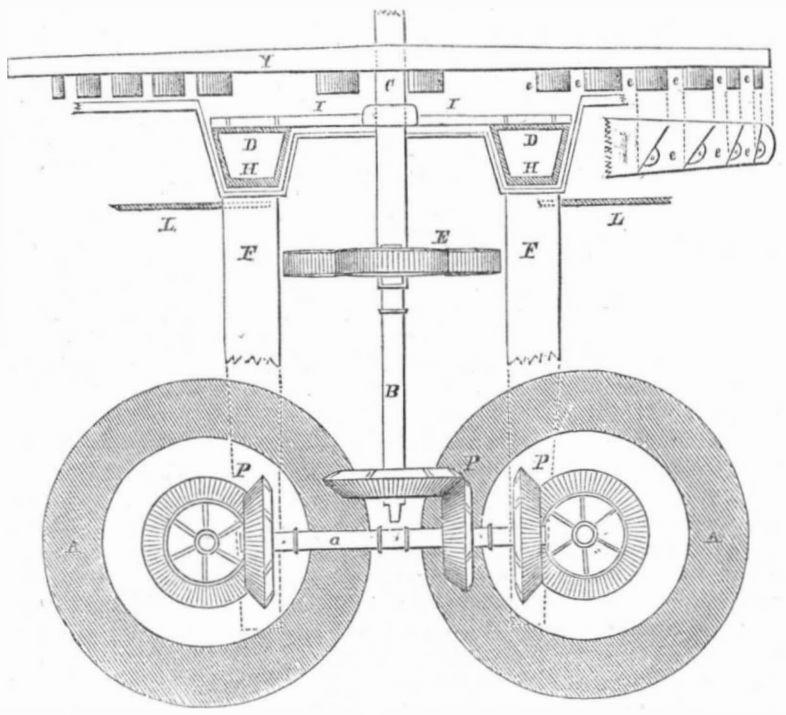
Figure 1.



bottoms, whence it is conducted into the bolts through common spouts.

The difficulties met with in the use of these feeding arrangements are principally in the meal being supplied irregularly by the "drop shoes," into the bolts. The jar of the shoes condenses the meal in the large spouts over them, and by drawing the sliders or gates, so much meal often falls down and rushes into the bolts, that it is not only imperfectly bolted, but is the cause of sending forward so much offal, returns, &c., to the subsequent machinery, that it is not uncommon to find the elevators, conveyers, and spouts choked, thus producing great derangement, and materially retarding business. Any derangement in the motion of the mill causes more than a corresponding difference in the amount of meal supplied to the bolts; if the mill runs a little too slow, the feed or meal slides less freely from the shoes, and condenses more in the spouts. If a little too fast, this packed meal suddenly slides out of the shoes and spouts, and is discharged into the bolts so rapidly that they are overloaded with a largely increased amount, which produces the difficulties above indicated. By this improved mode

Figure 2.



of supplying the feed to the bolts, all this difficulty is avoided, and the feeding is made equal and uniform at all times, machinery simplified, and the friction somewhat diminished.

We now proceed to describe these improvements. Y, fig. 2, is the flight arm of a hopper boy; *e e e e* are flights on the under part of the arm, which stir the meal to cool it; they are usually made of wood, and dovetailed, in a fixed position, and on an inclination with the edge of the flight arm, Y. These flights carry the meal towards the center of the hopper boy, where it is usually fed to the bolts after being cooled.

The flights, *e e e e*, may be made of metal of any suitable kind, with a small flange at one edge, and attached to the flight arm, Y, with screws, as shown at fig. 2, *e e e e*, by the inverted section of the flight arm, Y. This enables the work to be done quicker and cheaper, and the angle or draught of the flights, *e e e e*, may be readily altered, so as to convey the meal more or less rapidly to the centre, as desired for the purpose of supplying the bolts, and to prevent sending too much meal to be packed up at the center of the cooler, as is sometimes the case with the old plan.

In these improvements the "drop shoes," and cam beating wheels, are dispensed with, and the annular chamber, D, fig. 1,) is substituted therefor). Inside of this chamber, D, and under the flight arm, Y, fig. 2, is attached to the cooler shaft, C, four sweeper arms, J J, fig. 2. They are made of cast-iron and attached to the shaft, C, fig. 2, so as to revolve near the floor or bottom of the annular chamber, D. On the ends of the arms, J J, are affixed sweepers, H H, of any suitable material, which, running immediately over the tops of the spouts, F F, fig. 2, sweep around and discharge the meal through openings which are made to communicate with the spouts, F F, by drawing the slides, L L, any required distance, to permit the meal to pass through more or less, as may be desired, to supply the bolts, A A. This annular chamber, D, is made from 4 to 5 inches deep. The sides can be made of tin, zinc, or sheet-iron, or any suitable material, and of sufficient diameter, to reach over the spouts, F F, which conduct the meal to the bolts, A A. A cover is placed over the top of the chamber, in which are two apertures, with slides to close when desired, on the underside, to permit the meal to fall from the hopper boy, into the annular chamber, D, and there being carried around in the chamber by the sweepers, H H (which revolve as described close to the floor or bottom.) The slides, L L, being placed close at the top of the spouts, F F, over which the sweepers, H H, pass, the meal is thus swept through the openings made by drawing the slides, L L, in equal and uniform streams, which is the great desideratum in bolting, as it must readily be perceived that unequal feeding to the bolts must produce unequal and imperfect bolting, with a corresponding variation in the quality of the flour and imperfection in its separation from the offal.

We will next describe further improvements, the object of which is to simplify and cheapen machinery, save power, room, &c. By the usual mode of building mills, the power to drive the bolts and cooler, is taken directly from the primary upright shaft, which extends from the motive power, vertically, up through the mill, but it is taken at two different points.

The cooler shaft, C, fig. 2, that drives the flight arm, Y, is driven at the top and terminates in a common "step" at the cooler floor, the bolts being generally placed immediately under the cooler on the floor below, and connectt ed by horizontal shafts, with the "upright."

In the improved arrangement the cooler shaft, C, is made long enough to pass down through the cooler floor, and is there connected by means of the shaft, B, fig. 2, spur wheel and pinion, E, with the bevel wheels, P P P, on the horizontal shaft, *a*.

These bevel wheels, connect with others P P, on the bolt shafts, A A, or in any other convenient manner, and with any suitable machinery. By this mode of gearing bolts from the cooler shaft, much labor and expense in machinery is saved; a great saving is also effected by dispensing with machinery posts, as the bridge-trees at the ends of the bolts constitute a basis for most of the small amount of machinery required in this improvement. The bolts can be placed in any convenient position desired, without reference to their being reached with horizontal shafts from the uprights; they may occupy any desirable position, so that their heads are under or near the cooler.

By dispensing with the cam wheels and drop shoes in feeding the bolts, much labor is avoided, as the wheels are generally wedged or keyed on the bolt shafts, or the gudgeons of the same, and are frequently working loose, by constant jarring. The disagreeable noise of the shoes, is also obviated; the knocking of which produces a constant wear of the bolting cloth, and also loosens the wedges, keys, and screws about the heads of the bolts, shoes, and spouts.

For further information, address Samuel Taggart, Indianapolis, Ind.

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NEW YORK, DECEMBER 24, 1853.

The New Rule of the Patent Office.

We have already invited the attention of the Commissioner of Patents to the new regulations of the Office, which require that claims for improvements on separate and distinct parts of a well known machine, shall only be made under separate and distinct applications for patents. This is very nearly equivalent to a regulation forbidding two claims to be made in any application for a patent, for not more than one in a thousand of the applications made are for *new* machines, but for improvements upon parts of those old and well known.

The inventor then, who, after years of patient oil, and too often of bitter privation, has finally succeeded in perfecting his invention, which embraces perhaps three or four, and often many points of novelty, all entering into the one harmonious whole; and after having expended his time and money for years, finds himself, at last, by this stern rule of the Patent Office, reduced to the necessity of abandoning all his claims but one, as it is often to him a moral impossibility to raise a sufficient amount of money to procure separate patents upon each of them.

But we do not assent to the legality of this proceeding. The present Patent Laws have been in existence nearly eighteen years, yet never until within a few weeks has any such rule been laid down by those administering them. Patents embracing various claims have been repeatedly before our courts, and it seems to us that if this be contrary to the act, as is held by the originators of this rule, some shrewd lawyer who was taxing his wits to the utmost to destroy their validity, would have discovered the discrepancy. But we have positive *legal* testimony to the contrary. Precedent is the great basis of law, and any interpretation of a statute which has been recognized as valid by our highest Courts in hundreds of cases, through a period of more than seventeen years, ought by this time to be considered as the acknowledged interpretation of the law.

But let us consider the enactment in question:—The Act approved July 4, 1836, sect. 6, provides, "That any person or persons having discovered or invented any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter . . . . . may make application to the Commissioner . . . . and in case of any machine . . . . . shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery."

Now we would be glad to know how any construction can be put upon this language which will discriminate between a new invention and an improvement upon an invention. They are both, by the language of the statute, entitled to precisely the same privileges, and any discrimination in favor of the one is a violation of the statute, and a gross injustice to the other.

We have in our mind, at the present moment an individual who has invented a brick machine, embracing, we think, six features of patentable novelty. Now this invention does not consist, strictly speaking, of improvements upon any *one* machine. The inventor has doubtless seen many machines having in view the same objects as his—he has employed his ingenuity to invent a new machine which shall be in his judgment better than any of the old; he has succeeded, and has produced not a new machine, for brick machines resembling his in many particulars, have been long used—but an *improvement* upon brick machines.

Now we ask if an improvement of this character may not be what is meant by the Act, and may not consist of separate parts forming the basis for separate claims, as well as an original *machine*. Does the section of the Act in question discriminate in any manner between them?

But the great point is, will the interests of inventors and the public be better subserved by this new regulation? If so, we are ready to yield the point, but we think not. Three parties, perhaps, should be included in the consideration—the Inventor, the Patent Office, and the public. The first party, for whose benefit and encouragement the Act in question was passed, no one, we think, can consider as benefited in any manner whatsoever. On the contrary, it is in three cases out of four the source of glaring injustice to them. It would be better for them, as a class, to raise the price of granting a patent to sixty dollars, as under the stringency of the present rules, it is almost impossible for any one to proceed without the assistance of an agent or a legal adviser, whose charges they are obliged to pay in addition to the patent fees, so that the cost of taking out patents upon several claims amounts to a sum by no means trifling to a poor inventor. Take the case referred to above. We will suppose the cost of a model to be twenty-five dollars, a like sum will be required for making out his application, and thirty dollars at the Patent Office. This would amount to eighty dollars, but if six patents are taken it amounts to no less than four hundred and eighty dollars, more than many a poor inventor can raise by any means whatever.

As to the second party in the consideration, if the Patent Office is reduced to the pitiful necessity of adopting such a measure to replenish its funds, let it be known, and we will ask Congress to take some measure for its relief. But nothing of this kind is necessary, as it is well known that the present price paid by inventors proves a source of revenue after all the expenses are paid. But the Patent Office is actually injured by this regulation, for we are positive fewer patents will be applied for than would be under the old regulations. Inventors are unable, as a general rule, to incur the additional expense of procuring several patents, and the protection afforded by a single claim, is often so slight that it is not worth the cost of obtaining.

The public is interested in the matter only as it favors or retards the advancement of the arts and sciences. If invention is encouraged as much under the new as the old regulations it is as well for them, but if not, it is otherwise, so that their interests, and those of inventors as a class, are one. Will the onward march of improvement, then, be hastened by a rule which is oppressive to the poor mechanic who has labored for years in the noble endeavor to benefit himself and the public by diminishing labor or adding to the articles of convenience and comfort in public use? Will the honor of America be increased by discouraging those who have been striving to add a new laurel to the wreath which binds the brow of American Invention?

We still believe that Commissioner Mason, in whose judgment we have the most implicit confidence, will repeal this new regulation, which we are confident will, if insisted on, be productive of more injury to inventors, and if so, to the public, than any other regulation of the Patent Office, which has been made for years. Judge Mason, we believe, is, as any man should be in his situation, friendly to the class whose interests it is his duty to subserve, and we shall be greatly disappointed if this oppressive rule be allowed to exist as his interpretation of the law.

Patent Office—Report of the Secretary of the Interior.

It is well known to most of our readers that we have always opposed the surrender of any portion of the Patent Office to any other than the legitimate purpose for which it was built.

There is no doubt that the original designers of this noble edifice contemplated its use strictly and entirely for inventors—they saw as the arts and sciences progressed that the plan could not be too broad for the reception and proper display of models, the preservation of the records, and for the offices in which its duties were to be administered. As its graceful and airy halls began to develope their convenience and symmetry of design, they tempted the cupidity of the officials to seize upon them for their own use, and soon after the creation of the Department of the Interior, the Patent Office was placed under its subordination. It was indeed humiliating to the Commissioner to be thus compelled to surrender to the dictation of a superior officer, especially after the Patent Office had so long maintained an isolated and distinct administration, and we are confident that had the Commissioner been less obsequious and more firm and independent, he could have prevented this unwarrantable interference, and preserved the Office, as it should be, above the reach of political influence or dictation.

The Commissioner of Patents, if he has the tact and talent necessary to a judicious management of the office, is more competent to give it direction, suggest, and carry out reforms than any other person. The present Secretary of the Interior evidently understands this, and places his reliance upon the ability and discrimination of Judge Mason, the present able and accomplished Commissioner, whose management of the office has thus far secured for him the confidence and respect of all who have had business with the Department. In our last number we published such portions of the Report of the Secretary of the Interior, as related to the Patent Office and its management—he recommends an increase of the examining force, and truly says that the delay before final action can be obtained after the application is presented "is a severe trial to the patience of the inventor and often a serious loss to him as well as the public." Congress has for some years entirely neglected the just demands of inventors, and we hope at least that it will not fail to authorize the Commissioner to increase the force proportionate to the actual necessities of the Patent Office.

No application should remain unexamined in the Office over three months at the furthest, this would stimulate genius to greater activity, and increase the number of applications.

The next point to which the Secretary of the Interior directs attention is the condition of the models of rejected applications, and those of designs of stoves, &c. We recommend that the stoves be sold at public auction, and the proceeds of the sale applied to the patent fund. They are not arranged in cases, are cumbersome and totally valueless to the office. The drawings and specifications are sufficient for the purposes of examination; the same remark applies to all rejected applications; the models are in the "tomb of the Patent Office," a mass of confusion. They are valuable only to their applicants, and whenever they elect to withdraw their applications the models should be returned. The law should be so amended as to allow the Commissioner to return them whenever they are demanded.

Much well-grounded complaint now exists against the practice of retaining rejected models, when they are really valuable only to the inventors whose claims have been refused. It is not uncommon to find inventors renewing their claims before the Office after they have once withdrawn them, and as matters are now conducted, they cannot do so without preparing new models; under such circumstances it would be a wise and liberal policy to allow the original models to be returned. There is certainly no reason for retaining them as the specifications and drawings would answer all the purposes of the Office.

We are the advocates of prompt legal action, and we hope the reform in the law as suggested respecting appeals will be acted upon at once. The present is a rickety system of annoyances to all concerned, let us have something decent as a substitute. Concerning the occupation of the Patent Office Building, the Secretary's recommendations are admirable and will find a hearty response from the inventors; they do not wish to pursue the dog-in-the-manger policy, because at present there is plenty of room in the Patent Office Building for the transaction of its legitimate duties, and also to afford *temporary* accommodations for other Bureaus, but the time is rapidly approaching when the entire building must be demanded for the use of inventors; this suggests the urgent necessity which exists for a new structure to be used by these Bureaus when they can no longer find room in the Patent Office without hindering its legitimate operations.

We hope the Secretary's recommodations will receive prompt action from Congress, they are well worthy of it.

Recording of Assignments—Property of Patents.

As we have had a number of inquiries respecting the recording of patent assignments, the following information will be interesting to many of our readers.

The Act of Congress, 1836, Sec. 11, provides "that every patent shall be assignable at law, either as to the whole interest or any undivided part thereof by any instrument in writing, which assignment, and also every grant and conveyance of the exclusive right under any patent, to make and use the thing patented, within and throughout any specified part of the United States, shall be recorded in the Patent Office within three months after the execution thereof."

A correspondent writing to us says:—"I assigned to J. B. two years ago, the exclusive right under my patent of a certain portion of the United States; he neglected to have the assignment recorded, and now he desires me to grant him a new assignment, but I feel that I cannot do so, because I have not the power, having made the assignment to him already; what is to be done in such a case?

The interest in a patent which is made assignable by our patent statute, is undoubtedly assignable at common law; Curtis is clear upon this point. He says: "the statute renders it necessary to record the assignment in the Patent Office within three months of the execution thereof to affect intermediate *bona fide* purchasers without notice. But it has been held that in other respects it is merely directory, and that any subsequent recording will be sufficient to pass the title to the assignee."

In the case of Pitts, vs. Whitman, in "Story's Reports," an objection was made to the deed of assignment belonging to the plaintiff (Pitts) because it was dated 17th April, 1838, and not recorded until the 19th of April, 1841, three years afterwards. Judge Story held the statute specifying *three months* for assignment to be merely directory. Speaking in his own logical manner, he says: "if a patentee assigned his whole right to the assignee for a full consideration, and the assignment is not recorded within three months, and the assignees should make and use the machine afterwards, could the patentee maintain a suit against the assignee for the breach of the patent, as if he had never parted with his right? This would seem to be most inequitable and unjust, and yet if the assignment became a nullity, and utterly void by the non-recording within three months, it would seem to follow as a legitimate consequence that such a suit would be maintainable. In furtherance then of right and justice, and the apparent policy of the act, and in the absence of all language, importing that the assignment, if unrecorded shall be deemed void, I construe the provision as to recording to be merely directory for the protection of *bona fide* purchasers without notice. The assignment is like the common case of a property deed, required by law to be registered, on which the plaintiff founds his title, where it is sufficient, if it be registered before the trial, even after the suit is brought."

This is very plain; an assignment of a patent, or part of it, then, is good and valid although not recorded; but an assignee must have his assignment recorded in the Patent Office, before he can maintain a suit in law or equity upon the patent, either as a sole or joint plaintiff against another party.

Patent property is assignable like any other species of property, and in cases of bankruptcy, a patent already obtained passes to assignees. It has also been held that a contract may be made to convey a future invention, as well as a past one, and that a bill in equity will lie to compel a specific performance. In relation to inventions, past and future, contracts are just as binding between two or more parties as any other contracts—bargains. In purchasing patent property and dealing in it, parties cannot go wrong, if they proceed upon the same principle as in purchasing and dealing in other property. The law is as clear and the practice as specific in adjudicating upon patent, as any kind of property whatever.

The Swedish Government has decided on a vast system of railways, the execution of which will be confided to an English company.

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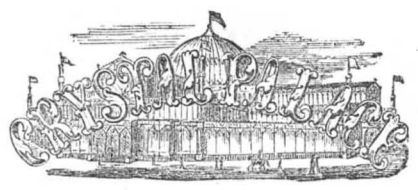

Cotton.—We certainly expected to find a very noble and large display of this great American product, but have been disappointed. Only five bales of cotton are on exhibition, and although these are superb of their kind, we have not been able to discover any samples of the *finest* qualities. There is one bale from Joseph West, Barbour County, Ala., and another bale from the same State, but the exhibitor's name we were unable to decipher. The cotton of Mr. West is silky, of good length, strong, clean, and has an excellent color. Jefferson Nailer, of Warren Co., Miss., exhibits one bale of short staple, very strong and white. One bale from Dr. S. Bond, of Green Bottom, Shelby Co., Tenn., is very fine in staple. The last bale is that of Col. John Pope, of Memphis, Tenn., which we noticed on page 88. In that paragraph taken from an exchange, it is stated that the merchants of that city had made him a present, because he exhibited the best cotton in the Crystal Palace. His cotton is of a very fine quality, good length of staple, silky, white, and strong, but the jurors not having made their awards yet, the above verdict may be premature.

From an article in the Patent Office Report of 1852, by C. F. McCay, we learn that the average annual cotton crop of the United States is estimated at 3,000,000 bales of 400 lbs. each, 1,200,000,000 lbs. In 1821 the export of American cotton was only 124,893,000 lbs., it has increased to 1,000,000,000. These figures show a vast increase in thirty years, and the demand has been equal, if not greater than could be supplied. From this, the legitimate inference may be drawn that the production of cotton goods will increase much faster than the population of nations, and that during the next thirty years, the increase of raw cotton will be as great in proportion as it has been during the past. Dr. Lee thinks that we have land and climate for the production of 9,000,000 bales annually. Allowing 200 lbs. to the acre, it will only require 18,000,000 acres to produce this amount. The four States of Georgia, Alabama, Mississippi, and Texas, contain four times that number of acres of choice cotton lands. It may be, however—as most of our cotton is exported—that those countries which buy of us, will devote more attention to the raising of this material to supply themselves. England is endeavoring to do so, and by recent news from France, efforts of the same kind are being made by that country.

Cultivation of Cotton in Algeria.—Two decrees have recently been published in Paris for the encouragement of cotton culture in Algeria, where many successful experiments—it is said—have already been made. By these decrees it is declared, 1st, that cotton seed shall continue to be furnished by the government to colonists. 2nd, that for three years, from 1854, the government shall purchase the cotton product at a price to be fixed each year according to the quality. 3rd, that at the expiration of those three years, premiums shall be given for two years for the exportation of the cotton of Algeria. 4th, premiums shall he given for the introduction of machines for the use of planters. 5th, there shall be provincial premiums—three for each province—of 5,000, of 3,500, and 2,000 francs, to the planters who produce the best quality of crops and the largest quantities. A sum of 100,000 francs has been appropriated from the civil list for the encouragement of the cotton cultivation in Algeria, to form an annual premium of 10,000 francs, to be called "The Prize of the Emperor." It is confidently expected by the French, that in a very few years Algeria will supply as much cotton as will render France independent of the United States. We have also seen statements in some of our foreign exchanges to the effect that cotton has been raised in Algeria, equal in staple to the best American Sea Island. These statements, however, must be received with great caution. We have endeavored in vain to obtain the statistics of the amount of cotton consumed by France annually, but the quantity cannot be small.

We speak in reference to that obtained from America, and all other countries, for we know that in 1852 302,000 bales of American cotton were imported into Havre.

East India Cotton.—For many years Great Britain has endeavored to ob ain a greater supply of cotton from h r vast possessions in the East Indies. Some American planters have been employed for years by the East India Company to teach the natives. American machines have been used to clean the cotton, and every appliance to conduct the culture properly have been employed, in order, if possible, to relieve the Manchester manufacturers from dependence on America. In 1850, when the price of cotton rose to 11 cents per lb., from 7 cents in 1849, owing to our short crop, much effort was made by the Manchester Chamber of Commerce to organize measures for the future cultivation of cotton in British provinces, so as to relieve them from depending on the United States. A very large meeting of this body was held in Manchester on the 9th of September, which was attended by delegations from Glasgow and Preston, the two cities which, next to Manchester, manufacture the greatest amount of cotton goods. They engaged Alexander McKay, the author of a book named the "Western World,"—which is well known to our people as being an account of the author's experience in America—to go to the East Indies and report on the obstacles existing there to the success of the cotton culture, and the best means of removing them. He went to that country in 1851, but died before he completed his task—a work for which he was eminently qualified. In 1851, 329,000 bales of East India cotton were exported to England during the high prices, but this amount fell off to 200,000 in 1852 at moderate prices, so there appears to be very little hope of obtaining anything like an adequate supply from that quarter of the world. In fact, it has been asserted over and over again, that no confidence can be placed in the natives of that country in either cleaning or packing their cotton, but the great drawback to its success hitherto has been the small amount which has been raised to the acre. Down to the present day, the average production on the experimental farms recently established by the East India Company under American planters in Upper Bengal, was only 25½ lbs. per acre, the maximum being 57 lbs. over nine acres, the minimum 11¼ lbs. over 219 acres. In Madras, four similar farms yielded, in 1842–3, an average of 41 lbs. per acre, and the most sanguine witnesses examined before the House of Commons only estimated the native seed to yield from 60 to 70 lbs. of clean cotton, and the best seed at 90 lbs. per acre, the land even in this case being made to bear such a crop in a rotation of only every third year.

British Guiana Cotton.—At one period, this portion of the world raised considerable cotton. In 1803, when it was captured from Holland, it was a cotton growing country, and produced very superior qualities; the two provinces of Demerara and Essequibo exported 46,435 bales that year. For two hundred miles between the rivers Pomeroon and Courantyne, on the sea coast of Berbice, it was laid out at one time solely with cotton plantations, but since 1815 its culture has continually decreased, and at the present moment we believe not a single pound of it is exported from that quarter. The export virtually ceased in 1841. In 1832, the year preceding the act of emancipation, 1,533,785 lbs. were exported. In a dispatch from Governor Barkly, to Earl Gray, dated April 3, 1850, he says, "at the present date, in all this vast territory, it would not be easy to find a cotton shrub within its entire limits."

Why the planters of British Guiana, from furnishing one-third of the cotton consumed in Great Britain at the beginning of the century, were induced gradually to abandon the culture of that article, is a question deserving of serious investigation.

That it was not inferiority in the soil, or in the quality of cotton produced, is certain. Cotton was here a perennial, not as in India or the United States, an annual plant, and the system of forcing it into blossom by sea-water irrigation was, as far as I know, peculiar to this colony, and productive of the greatest advantage. The species of cotton, too, was what is called the 'long staple,' and the quality so superior, as still to be quoted in the price-currents next in order to the famous 'Sea Island' variety."

The reasons of the failure of cotton growing in that country, he attributes to bad cultivation, for while in 1800 the land yielded 300 lbs. to the acre, it dwindled down to 150 lbs. in ten years. The once flourishing cotton fields of British Guiana have been converted into sugar plantations.

West India Cotton.—In 1850 considerable attention was also directed to the West Indies, in order to see if cotton could not be successfully cultivated there. A large meeting of planters was held on the 25th September that year, at the Jamaica Bank, in Kingston, for the purpose of forming a company to test the cultivation of cotton on a large scale, in Jamaica. A committee was appointed to report on the subject, which report is now before us; it presents not the least shadow for any hope whatever being entertained of the successful cultivation of cotton in that Island; it presents only a sad picture of the state of that Island.

Of Egyptian and Brazilian cotton, England imported 245,000 bales in 1852, so that it is very evident that the sole and only country on which the cotton manufacturers of England can rely for their supply of cotton, is the United States. At present, middling cotton is selling at New Orleans for 9½ cents per lb., taking the crop for 1853 at 3,100,000 bales of 400 lbs. each; value of this is $117,800,000. Of this 703,000 bales are set down in the Patent Office Report as the home consumption, which at the above price—taking that as an average—amounts to $26,714,000, leaving $91,086,000 as the sum paid by foreigners for this American staple. Instead of other cotton growing countries increasing their supplies, they are falling off, and some countries, especially British Guiana, appears to have been swallowed up in this cotton contest. When cotton was 40 cents per pound in 1817, Berbice was a cotton growing country, but when the price came to be reduced in 1821 to 19 cents, it ceased to be a cotton growing country. More than one cause has contributed to this result, but the principal one is the spirit which has always been exhibited by American planters in encouraging and applying improved machinery connected with its cultivation, and in the cleaning and packing of it for market; also the care manifested in attending to the proper management of the soil and the choice of seeds, whereby the quantity raised to the acre has been, and is now more than sixteen times the amount raised in the East Indies.

Trial of Steam Engines in the Crystal Palace.

The annexed documents are interesting correspondence between the Director of Machinery in the Crystal Palace, and L. B. Page, Esq:

L. B. Page, Esq.—Dear Sir:—In reply to your note of this morning, referring to the trial instituted on the evening of the 17th inst., to test the qualities of different "steam engines" on exhibition, I would state that as the trials were made in the absence of the owners, and they not having advised or suggested it, I do not feel at liberty to furnish officially for publication any comments of my own which might prejudice the interests of any exhibitor. The "governor" of the Alabama engine, having exhibited no variation while working from 48 strokes down to 20 per minute, under a pressure of from 40 to 10½ lbs. on the square inch, afforded proof that the "Southern Belle" was not in proper working order. I therefore leave out for the present the notes taken of its operation.

The results of the trial of the two engines employed to drive the machinery in the Arcade were so eminently satisfactory, and so creditable to the skill of the builders, that I do not hesitate to furnish you with such remarks, &c., as I have prepared for a report to the Association. Yours, J. E. Holmes,

Director of Machinery.

Extract from Report.—The most interesting trial during the Exhibition, was that of testing the qualities of different steam engines, in relation to the economical use of steam through the arrangement of the valves and cut-off; this trial was instituted under my direction. Prominent among all the beautiful and useful machinery on exhibition, are "three large Steam Engines." The first, a beam engine, was manufactured by Messrs. Corliss & Nightingale, of Providence, R. I.; G. H. Corliss, an eminent engineer, designed it. The peculiarities of this engine, aside from its substantial qualities and graceful proportions, consist in certain arrangements of the valve and cut-off, by which great economy in the use of steam is effected and a most perfect regularity in motion is obtained. The cylinder is 14 inches in diamter, the stroke 4½ feet, requiring 37 revolutions per minute, to give our shafting the proper speed; the rated power is sixty horse, with 70 lbs. steam pressure. The second engine was designed and its construction superintended by John C. Hoadly, and was built at the "Lawrence Machine Shop," under the agency of Gordon McKay, Esq. It is a double horizontal engine, the two cranks being set at right angles to one another, and working a single belt-fly-wheel. Each cylinder is 15 inches in diameter; stroke 32 inches. The rated power is 60 horse-power, under 60 lbs. steam pressure.—

The third is the "Southern Belle," which was designed and constructed by John S. Winter, of the "Winter Iron Works, of Montgomery, Ala. The workmanship is elaborate, and has been universally admired; it is a horizontal engine of 13 inch cylinder; stroke 30 inches. The bed on which it rests is excellent, and as a casting, will vie with any work of the same magnitude in the Arcade; its "governor," I am sorry to say, seemed to have no control over its motions, and this may be the reason of its want of success and withdrawal from trial: I hope another opportunity will be afforded to learn the true working capacity of an engine on which so much labor and skill have been expended.

At 7 o'clock, P. M., Dec. 17, I directed the fires to be drawn from under the boilers, and requested the engineers to give free ports to their engines, so that they might work through the whole range of the steam to the best advantage. The pressure of the "gauge" was at 42 lbs.—the Corliss Engine making 37 revolutions, and the Lawrence Engine 46 per minute. Each of these engines was driving 400 feet of shafting and a large number of belts of running machinery. The "Southern Belle" was making 48 revolutions, but without driving any band to communicate power. The number of revolutions were taken and the pressure noted every ten minutes, until a quarter past 8 o'clock, and every five minutes afterwards till the engines stopped.

Results.—At 7h. 20m., six pumps were unshipped from the Corliss engine shafting, without making any sensible increase in its speed, and when under 27 lbs. of steam pressure.—They were coupled again in one minute afterward without retarding its speed more than half a stroke. At 8 o'clock the running machinery was then detached, the pressure then being 7 lbs.; this increased the speed of the Lawrence engine 2 strokes per minute above that which was noted 10 minutes previously under 10½ lbs. pressure—both engines turning the long lines of shafting, belts, loose pulleys, &c., the Corliss Engine made 14 revolutions, the Lawrence Engine 10. At 8h. 35m., both engines made 7 revolutions per minute under ¾ lb. pressure; 4 minutes later the Corliss Engine stopped. The Lawrence Engine continued to work for 6 minutes longer, and made 20 strokes during that time. The friction of both of these engines, together with that of the great lines of shafting, must have been well provided for, to produce such results.

Committees on Patents.

The following are the Congressional Committees on Patents:—Senate—James, Evans, Stuart, Seward, Chase, and Thompson. House of Representatives—Benjamin B. Thurston, of Rhode Island; Samuel A. Bridges, of Pennsylvania; Andrew Tracy, of Vermont; Bishop Perkins, of New York, and Clement S. Hill, of Kentucky.

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TO CORRESPONDENTS.

G. V. A., of N. Y.—We are constantly receiving letters from our clients, stating that the same parties whom you name have written them under the same pretence. The only object hey have is to get you to correspond with them, and then they will inform you that it is indispensable to them that your patent be issued before they consummate the trade, and add in a very insinuating polite manner, that for a small consideration, say $5 or $10, remitted by return of mail, they will exert an influence with the Department to get the invention examined immediately, or if a rejected case, they will get it re-examined, which would do about as much good as it would to attempt to bribe the Commissioner with a ten dollar bill. These men have no reputation as Patent Agents, and their mode of pilfering from unsuspecting honest inventors is most reprehensible, and we have often wondered that the respectable agents in Washington have not taken some means to rid themselves of these pests to the profession.

J. S. K., of N. Y.—The product of smoke, obtained as you have described, may be used for agricultural purposes: a bottle of it, sent from Boston, is now in our possession. Soot is used extensively in England by gardeners, and patents have been taken out for conveying smoke from a chimney into water by an air-pump. How does locomotive building get on in Plattsburg?

W. S., of Me.—Ketchum's machine for mowing may be superceded; we certainly hope and expect some great improvements will yet be made on this class of machines. Those now in use are adapted to special locations and conditions. Ketchum's machine, we are informed, does not do as well at the West as Rugg's, Bronson's, and others. It may not be what will suit your market, hence we advise you to make a personal examination before purchasing. Don't adopt Ketchum's, nor any other's, until you are satisfied of its ability to meet the wants of the Maine farmers.

N. W, of Vt.—There is no doubt your improvement in straw cutters embraces the same features as are claimed in the patent of Sinclair & Maynard, Nov. 15th, 1853.—The "fins" are equivalent to the flanges, and serve the same purpose: we cannot advise an application. Macomber's Patent was secured through our agency.

C. D. Y., of Va.—There is no peculiar apparatus for evaporating water, to moisten articles of manufacture, employed here; a shallow pan placed upon a stove, and supplied at intervals with water, will answer your purpose. Steam from the engine boiler is employed for such purposes in large manufactories.

A. H., of Pa.—The ore you send us appears to be iron in different stages of oxydization. Overman's "Mineralogist" is a good little work, price about $1. If you wish a copy we will send one on receipt of that amount.

F. McC., of Pa.—A machine having rotating cutting combined with pressure rollers, would infringe upon the Woodworth Patent. We should not feel willing to advise you to construct such a machine as you describe: it would infringe the patent, and you would be sure of prosecution from its owners.

J. H. S., of Pa.—We advise you to send us a model of your machine for examination.

E. P. C., of N. C.—We do not find anything patentable in the indicators which you so fully describe; substantially the same devices are in use.

J, O. A., of Geo.—We do not think your plan can be made to operate, at least this is our opinion.

J. E, f Mass.—We are obliged for your attention: the fact which you state respecting the eye-pointed needle is well understood.

P. W., of Mass—Your apparatus for operating the ship's rudder is not new: we have seen them operated by means of worm gear taking into cog wheels, as shown in your sketch.

J W. B., of ——.—The exhaust valves require the largest opening in order to relieve the exhaust side of the piston from all resistance as quickly as possible, and therefore require to be raised the highest.

J. H. B., of Mich.—Iron is not equal to copper as a conductor, and never can be.

F. H. Pearcy—Give us your residence, that we may be able to write you: we are often bothered in this way by our correspondents, who either fail to sign their names to their letters, or do not put down the town and State in which they reside. We are not to blame when correspondents do not comply with these important regards.

J. P. S. of N. Y.—Your apparatus for regulating the relative temperature of the air in dwellings and offices, is new, and if it will operate, it is useful where stoves and furnaces are used.

J L L M., of Pa.—Your model has been razeed so as to meet the requirements of the Office, in dimension, and returned to its place for examination.

D. P. S., of N. C.—The Gardner machine, we believe, would answer your purpose for crushing better than any other we are acquainted with. We know of nothing but quicksilver that will amalgamate with any degree of certainty.

F. P., of N. C,—Parson's saw mill, illustrated on page 252, Vol. 6, Sci. Am., is probably as good a mill as you will be able to find for your business: address S. E. Parsons Wilkesbarre, Pr.

J. S., of O.—The question of pre-invention, between yourself and Clemens, for the car ventilator, is to be settled only at the Patent Office: he may have invented it before you.

C. L., Jr,. of Ct.—Ericsson employs the pipes, but not as a substitute for the regenerator, but simply to receive the cold air and heat it while passing through them. Your hint might have directed his attention to this use of them.

S. P. B.—Your ideas concerning a reaper are none of them new; rotary sickles like yours have been repeatedly tried and abandoned; your rake is an old device, you could get no patent, and if you could it would not be worth having.

A. P. C., of N. Y.—There is no real safety in any device for preventing railroad collisions except "double tracks," let them be properly built, properly guarded at the turnouts, and collisions will be among things that were. Double tracks will also remove the great cause of detention.

R. S, Penn.—The only source to which we look with hope for a new motive power is electro-magnetism, and we fear it will be long before an engine is constructed on this principle sufficiently powerful and economical to compete with steam.

N. Y., of Ohio—We cannot supply you with Vol. 5, we have none on hand. $7 received.

E. L., of Ct.—We have seen the same plan for hanging saws as the one you submit for examination: it is old and well known.

J. M. P., of Geo.—"Ewbank's Hydraulics" contains a description of Montgolfier's Hydraulic Ram. Price of this work $2,50

J. W C., of Miss.—In the fourth volume of this paper you will find an engraving of a rotary engine embracing the same features as are contained in yours: it is neither new, useful, nor patentable.

G. H., Sen., of Miss.—By consulting the earlier history of railways you will find that, in several instances, the tread of both the running and driving wheels of cars were grooved and the rail made to fit therein, for the purpose of increasing the adhesion of the wheel to the rail in ascending inclines. We discover nothing new or patentable in your plan.

J. B. M., of Pa.—Some three years since, while on a visit to the Worcester Co. Agricultural Fair, we saw a boot crimping machine, constructed in the manner substantially as shown in your sketch. We do not remember the inventor's name, but it embraced your device.

J. B. S., of Pa.—There is no advantage that we can discover in making the outside of a rim of a water wheel smooth, and hanging the buckets on an endless chain. This device is old: see Rees' and Barlow's Cyclopedias, or Vol. 3, Sci. Am.

N. P. A., of N. Y.—There is no patentable feature in your printing press, and feeding the paper in an endless web is well known.

Money received on account of Patent Office business for the week ending Saturday, Dec. 17:—

W. McC., of N. Y., $20; W. & G., of Pa., $50: W. N.R., of Wis., $25: G. M. C., of N. Y., $20: S. G. B., of N. Y., $30; R. & M., of Ill., $32: B. & Co., of N. Y., $150; W. H., of N. Y., $10.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 17:—

T. G., of N. J.; C. W., of N. Y.; W. N. R., of Wis; R. & M., of Ill.

A Chapter of Suggestions, &c

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75 Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75; of Vol. 9, NONE.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted Persons should be careful to write their names plainly when they address publishers, and to name the post-office at which they wish to receive their paper, and the State in which the post-office is located.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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UNITED STATES PATENT OFFICE,
Washington, Dec. 2, 1853.

ON THE PETITION of Henry Burden, of Troy, New York, praying for the extension of a patent granted to him on the 2nd day of September, 1840, and ante-dated 2nd March, 1840, for an improvement in Machinery for making Hook-headed Spikes, for seven years from the expiration of said patent, which takes place on the 2nd day of March, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Monday, the 13th day of February next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evenig National Argus and Pennsylvanian, Philadelphia, Pennsylvania; United States Argus, and Scientific American, New York; Boston Post, Boston, Massachusetts; Atlas, Albany, New York; Morning Post, Pittsburg, Pa., and Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the thirteenth day of February next.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 14 3

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TO INVENTORS—The "Inventors Protective National Union," composed of inventors only, is now organized. You are invited to become members by sending your address, the names of your inventions, and $5, to the Superintendent or Secretary; your name and inventions are recorded in the book of the Constitution and By Laws, from which time you can participate in all the advantages of the Society. Copies of the Constitution and By Laws will be sent to inventors, on application, gratis. L. B. PAGE, Superintendant. Crystal Palace, New York. HAMMOND HOWE, Sec'y, Washington City. 14 3*

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14 2*

TO MANUFACTURERS AND MILLERS—For sale, a valuable Mill Seat, within one mile of the city of Troy, N. Y. It comprises two four story Brick Flouring Mills, each of which have four run of stone, and are capable of doing the best of grinding. Two wood dwelling houses, and one barn, with considerable land adjoining the whole. The stream upon which the above seat is situated is known as the Poestenkill, and furnishes strong power of 22 feet head, so that the mills could be converted, if the purchaser wishes, into other branches of manufacture. The buildings are well situated, and the facilities a manufacturer would have are very great, owing to the position of Troy as a noted and increasing railroad center, and the accessibility to and from the city, of the property. The object of a sale is for partition among the heirs. For plans and further particulars apply to or address
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ROBT. GRIFFITHS—Has put up a Railroad Chair Machine, at the Fountain Green Rolling Mill, and it gives full satisfaction as to its capability for doing work well; it is a good machine, and will make from six to seven tons of chairs per day, on a side; by running the whole machine constantly the day through, it will make from 12 to 14 tons of chairs in one day. Address ROBERT GRIFFITHS. Allegheny City, Pa. 13 3*

BAKER'S IMPROVED STEAM BOILER FURNACE, as used at the Crystal Palace, &c. Apply to J. AMORY, 28 State st, Boston, General Agent. 11 tf

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NEW HAVEN MANUFACTURING COMPANY—Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinists' Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Company are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 1 Platt st., New York, S. C. HILLS, Agent N. H. Manufacturing Co. 5tf

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1 tf GEO. W. BEARDSLEE.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16tf

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Scientific Museum.

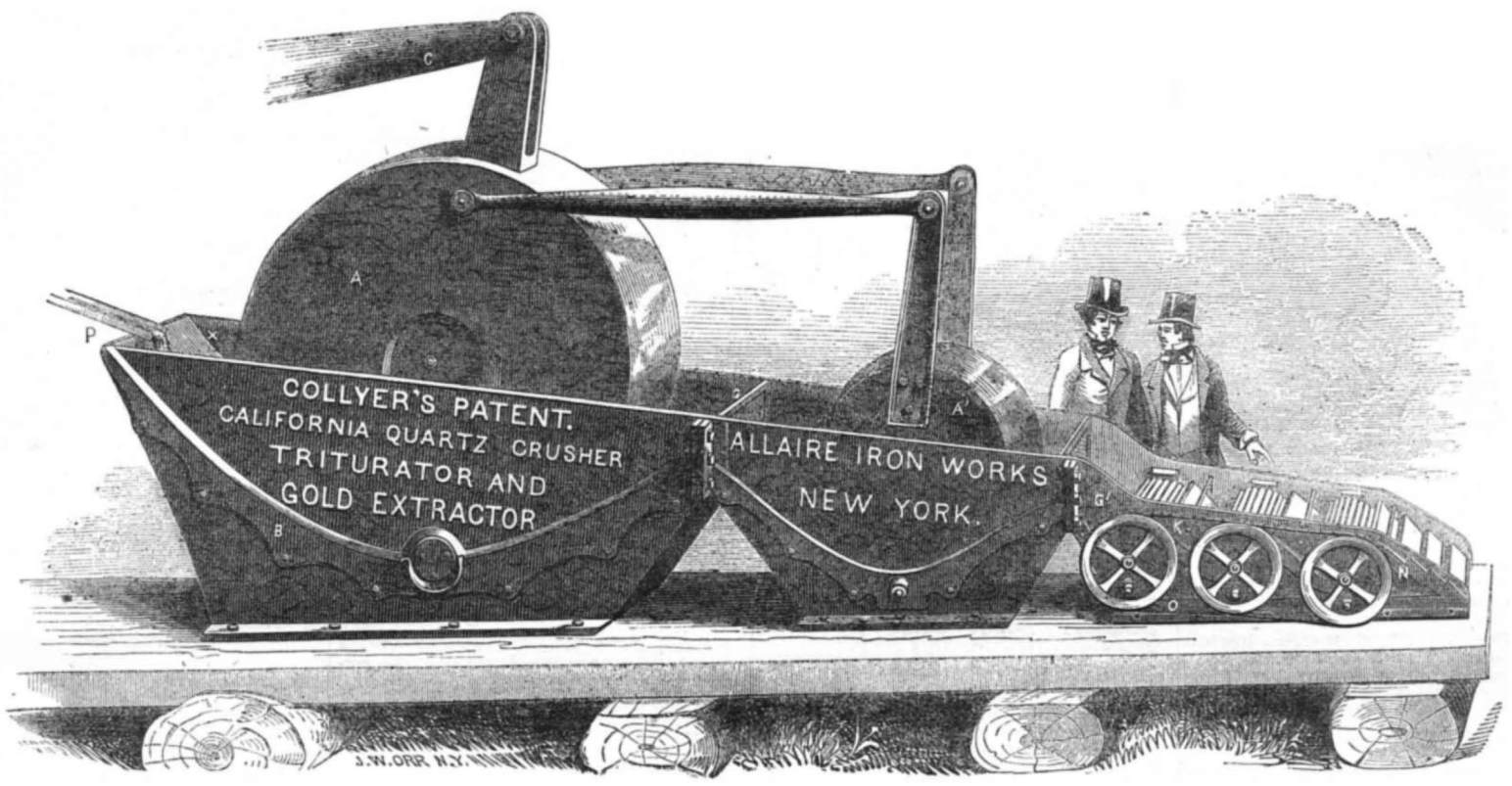
(For the Scientific American.]
Cornish Valves.

In looking over the Official List of Patents published in your valuable paper of the 26th, ult.. we noticed the account of a supplemental valve to the equilibrium pipe of a Cornish Engine, the object of which appears to be to regulate the velocity of descent of the plunger to the hight of the water in the stand-pipe or reservoir, into which the water is forced by the plunger; and which we think is a useless appendage to an engine of this kind. Cornish engines, as they are now constructed, and as they have been for more than fifty years, have their valves arranged and worked by parts adapted to effect this very purpose, and they would not be complete without such adjusting apparatus. In fact the mechanical contrivances used to work the Cornish valve, are in principle perfectly adjustable to the various requirements of the engine, and to add an additional valve is nothing more nor less than to have two appliances to accomplish the same object. There are various modes now in common use for adjusting these valves, and most of them are of the simplest kind: a wedge to slip under the valve balance weight, a thumb-screw to check the valve's motion, and a strap or rope to limit the range of the valve, are some of the methods which answer all intended purposes.

We cannot understand what manner of service this supplemental valve of H. P. M. Birkinbine can render, for if he constructs his equilibrium valve as it should be, and that is, as it is in every good Cornish engine, he has at once a valve adapted to every purpose for which his supplemental valve was designed to answer, why then go to the expense of adding another, and why increase the complexity of an engine without promise of real advantage.

OBSERVER.

COLLYER'S PATENT QUARTZ CRUSHER.



The engraving herewith presented is a perspective view of a machine invented by R. H. Collyer, of San Francisco, Cal., as a Quartz Crusher and Triturator. A quantity of quartz rock, or other ore, is continually thrown into the main crushing chamber, at X, and by a suitable arrangement, a constant supply of the necessary quantity of water, admitted in a continuous stream, is poured upon it from the pipe, P. Motion is communicated from the driving power to the main crusher, A, by the connecting rod, C, and at the same time is continued to the smaller roller, A', by the connecting rod, C'; thus a constant vibratory rubbing and rolling action is kept up by means of which the ore in the first chamber, B, is broken until it is sufficiently small to pass through the screen, G, into the small chamber, where it undergoes a more perfect pulverization by the action of the smaller roller, A'. The ore being now finely reduced, is carried with the current of water through the finer screen, G', into the amalgamator, where it is forced through the heated mercury by the slow movement of the fluted rollers seen in the engraving. If any particles of gold should escape the action of these fluted rollers, they will be caught by the riffles, N. O is a plug, at which the mercury or amalgam can be drawn off at pleasure.

The main crusher is 6 feet in diameter and weighs six and a half tons, or its weight may be increased by filling its interior with sand. The smaller crusher or triturator, A', weighs two tons, and may in the same manner be increased in weight. The machine presents nearly four thousand five hundred square inches of crushing surface.

The advantages claimed for it are, that when one portion of the surface of the crusher is worn, it is so constructed that another may be presented; that it scours or rubs off the impure coating of the aurifercus particles, that it thoroughly effects their amalgamation with the mercury; that it preserves the mercury in bulk instead of separating it in globules; that it is easily cleansed, simple in its arrangement, and not liable to get out of order.

For further particulars address the manufacturers, T. F. Secor & Co., at the Allaire Iron Works, 466 Cherry street, New York.

The Scientific Dog.

The Editor of the "Portsmouth Journal" recently made a visit to E. Merriam, at Brooklyn Heights. Mr. M. is a meteorological observer, and has made records from three instruments, every hour, day and night, for eight years, many of which have been published in the "Scientific American." The editor inquired:—

"But, sir, how do you manage to keep your record through the night hours—you would seem to want some time to sleep: how do you manage?" The reply was, "One member of the family keeps the record from seven in the morning to seven in the evening. Another keeps it from seven to eleven in the evening, and I and my dog keep it the other eight hours. I retire regularly, my dog is stationed in the entry by the clock, and at its striking immediately scratches at the door. I rise, make the record, and in a few minutes am regularly asleep again until the dog gives notice of the expiration of another hour."

"We saw," he says, "the intelligent animal which has been so faithful in aiding his master in his scientific researches,—and also the evidence of labor performed on the door of the sleeping room of his master. His regular service for three years he has deeply recorded in the panel of the door by an hourly scratch."

The Olive Crops promise to be most abundant in the Ionian Islands, particularly in Corfu, where the branches of the trees are actually breaking from the extraordinary weight of the Olives.

Taggart's Improved T-Square.

FIG. 1.

Fig. 2.

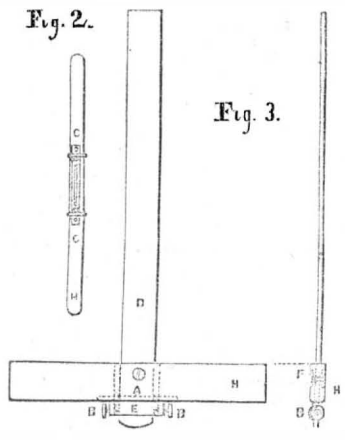


Fig. 3.

The accompanying engraving represents a new mode of adjusting the tongue of a T-Square to a right-angle with the stock. A Drawing Square made in this way is perfectly manageable; it can be taken apart with dispatch and without injury to the parts, to admit of straightening the edges when the material of which it is composed springs or becomes crooked. To a draughtsman this is a valuable improvement; it affords a cheap and tasteful square, its angle being at any moment under his complete control. Those who have used the square having the stock and tongue fastened permanently together, cannot fail to appreciate the advantages of this improvement.

DESCRIPTION—Fig. 1 is a view of the Square ready for use. A is a screw passing snugly through the stock, H, and tongue, D, as shown by the dotted lines at F, fig. 3. E is a metallic adjuster through which the tongue passes; the adjuster is fastened to the stock. H, by two screws, as shown at C C, fig. 2. B B are set screws operating on the tongue, D, adjusting it to a right angle with the stock, H.

S. Taggart, of Indianapolis, Ind., is the inventor, to whom all communications should be addressed.

The Indigo plant thrives well at the Sandwich Islands, in all moist situations and grows spontaneously wherever it once gets rooted. In fact, from a single plant, it spreads with great rapidity, covering in a few years, many contiguous acres, and rooting out everything else, even the thick sod of a heavy sward.

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$50 for the 3d	ditto	$20 for the 9th	ditto
$45 for the 4th	ditto	$15 for the 10th	ditto
$40 for the 5th	ditto	$10 for the 11th	ditto
$35 for the 6th	ditto	$5 for the 12th	ditto

The cash will be paid to the order of the successful competitors immediately after January 1st, 1854.

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

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